



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/588,419	06/06/2000	Joseph C. Olson	V0077/7124WRM	9440

7590

05/07/2003

Gary L. Loser Esq.  
Vice President and General Counsel  
Varian Semiconductor Equipment Associates Inc  
35 Dory Road  
Gloucester, MA 01930

EXAMINER

VANORE, DAVID A

ART UNIT

PAPER NUMBER

2881

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/588,419

Applicant(s)

OLSON ET AL.

Examiner

David A Vanore

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23 is/are allowed.
- 6) ☒ Claim(s) 1-22, 24 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Response to Arguments***

Applicant's arguments filed in the amendment received on September 17, 2003, have been fully considered but are not persuasive.

Applicant has amended the independent claims to include language indicating that the determination of beam parallelism and direction claimed by the Applicant are performed during an implant process and argues that Smick et al. fails to teach this limitation.

Smick et al. clearly teaches the measurement of beam parallelism and direction using the apparatus and method recited by the Applicant's claims (Col. 10 Lines 18-31) as pointed out in the last Office action, save for claim 23 whose reasons for allowability are noted below.

Claims 1-22 and 24-25 stand finally rejected by Smick et al.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-22 and 24-25 stand rejected under 35 U.S.C. 102(b) as being clearly anticipated by Smick et al.

Smick et al. teaches a device and method for determining the parallelism of a beam comprising the following:

1) A method and device for forming a charged particle beam (13) for irradiation of semiconductor material as recited in claims 1, 11, 14, 15, and 25.

2) A method and device for maintaining scan uniformity comprising forming an adjusted intensity profile at a first position using a slit which blocks a portion of the beam (Fig. 5 Item 70') and detecting the intensity profile, using Faraday detectors, of the beam downstream of the slit (Fig. 5 Item 72) and at a second position (Fig. 5 Item 16) where the parallelism of the beam is determined with respect to a reference direction (Col 8 Lines 10-68) and the respective detector/slit assemblies scan transversely with respect to the incident charged particle beam (Fig. 5 note armature 68) as recited in claims 1-22, 24, and 25.

3) A method and device having a controlling means comprising a computer which receives the detected intensity signal from the Faraday detectors and uses these signals to modify a beam distribution to maintain scan uniformity in an implantation process (Col. 8 Lines 10-68) as recited in claims 15 and 18.

4) A device and method for determining a direction or parallelism of an ion beam where a portion of the beam is blocked and a "shadow" is formed in the beam downstream of the beam modifying means. Smick et al. calls this shadow "dark current" and uses a fast sampling A/D converter to measure an integrator output during these periods to determine an instrument offset and create a corrected output to account for the "shadow" created during beam sampling by the Faraday detector as it passes through the ion beam as recited in claim 11.

Art Unit: 2881

***Allowable Subject Matter***

Claim 23 is allowed.

The following is an examiner's statement of reasons for allowance:

The prior art of Smick et al. teaches a device and method for determining the parallelism and uniformity of a scanned ion beam in an ion implantation device comprising two Faraday detectors. Claim 23 recites a third detector to determine the distribution of the ion beam in three dimensions. While the detectors of Smick et al. scan and determine the distribution of the ion beam, there is no teaching or suggestion in Smick et al. towards the determination of the beam profile in three dimensions or the use of three detectors to accomplish this goal.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 2881

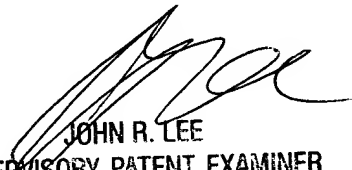
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A Vanore whose telephone number is 703-306-0246. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Lee can be reached on 703-308-4116. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

dav  
April 22, 2003

  
JOHN R. LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800